

SEQUENCE LISTING

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<110> Duke University
      Lin, Haifan
<120> PURIFIED AND ISOLATED piwi FAMILY GENES AND GENE
      PRODUCTS AND METHODS EMPLOYING SAME
<130> Attorney Docket No. 180-104 PCT
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<150> 60/110,091
<151> 1998-12-04
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Gln Glu Leu Val Asp Gly Leu Lys Val Cys Leu Gln Ala Ala Leu Arg
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Ala Trp Ser Gly Cys Asn Glu Tyr Met Pro Ser Arg Val Ile Val Tyr
690 695 700

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Arg Asp Gly Val Gly Asp Gly Gln Lys Thr Leu Val Asn Tyr Glu
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Val Pro Gln Phe Leu Asp Cys Leu Lys Ser Val Gly Arg Gly Tyr Asn
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Phe Ala Gln Ser Gly Gly Arg Leu Gln Asn Pro Leu Pro Gly Thr Val
750 755 760 765

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Ser Gln Ala Val Arg Ser Gly Ser Val Ser Pro Thr His Tyr Asn Val
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Ile Tyr Asp Ser Ser Gly Leu Lys Pro Asp His Ile Gln Arg Leu Thr
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Pro Ala Pro Cys Gln Tyr Ala His Lys Leu Ala Phe Leu Val Gly Gln
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Ser Ile His Arg Glu Pro Asn Leu Ser Leu Ser Asn Arg Leu Tyr
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		20					25					30	
Ile	Pro	Pro	Arg	Pro	Gln	Gln	Ser	Pro	Thr	Glu	Gly	Asp	Leu
		35				40					45		
Arg	Gly	Arg	Gln	Arg	Gly	Met	Val	Val	Gly	Ala	Thr	Ser	Lys
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Glu	Leu	Gln	Ile	Ser	Ala	Gly	Phe	Gln	Glu	Leu	Ser	Leu	Ala
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Asn Leu Asp His Val Lys Glu Ser Lys Thr Gly Ser Ser Gly Ile Ile
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Arg Leu Arg Ser Ala Leu Leu Phe Gln His Glu Asp Leu Ile Gly Arg
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Cys His Ala Phe Asp Gly Thr Ile Leu Phe Leu Pro Lys Arg Leu Gln
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His Lys Val Thr Glu Val Phe Ser Gln Thr Arg Asn Gly Glu His Val
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Arg Ile Thr Ile Thr Leu Thr Asn Glu Leu Pro Pro Thr Ser Pro Thr
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Cys Leu Gln Phe Tyr Asn Ile Xaa Phe Arg Arg Leu Leu Lys Ile Met
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Asn Leu Gln Gln Ile Gly Arg Asn Tyr Tyr Asn Pro Ser Asp Pro Ile
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245 250 255

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Lys Val Leu Arg Ser Glu Thr Val Leu Asp Phe Met Phe Asn Leu Tyr
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Gln Gln Thr Glu Glu His Lys Phe Gln Glu Gln Val Ser Lys Glu Leu
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Ile Gly Leu Ile Val Leu Thr Lys Tyr Asn Asn Lys Thr Tyr Arg Val
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Asp Gly Ser Glu Val Ser Phe Leu Glu Tyr Tyr Arg Lys Gln Tyr Asn
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Pro Glu Leu Cys Tyr Leu Thr Gly Leu Thr Asp Lys Met Arg Asn Asp
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 Lys Glu Thr Arg Glu Ala Pro Leu Ile Ser Val Lys Pro Leu Asp Asn
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 Trp Leu Leu Ile Tyr Thr Arg Arg Asn Tyr Glu Ala Ala Asn Ser Leu
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 Gly Arg Arg Ser Ile Ala Gly Phe Val Ala Ser Ile Asn Glu Gly Met
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 675 680 685
 Gly Cys Asn Glu Tyr Met Pro Ser Arg Val Ile Val Tyr Arg Asp Gly
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Ser Gly Gly Arg Leu Gln Asn Pro Leu Pro Gly Thr Val Ile Asp Val
      755              760              765
Glu Val Thr Arg Pro Glu Trp Tyr Asp Phe Phe Ile Val Ser Gln Ala
      770              775              780
Val Arg Ser Gly Ser Val Ser Pro Thr His Tyr Asn Val Ile Tyr Asp
      785              790              795              800
Ser Ser Gly Leu Lys Pro Asp His Ile Gln Arg Leu Thr Tyr Lys Xaa
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Cys His Val Tyr Tyr Asn Trp Pro Gly Val Ile Arg Val Pro Ala Pro
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Cys Gln Tyr Ala His Lys Leu Ala Phe Leu Val Gly Gln Ser Ile His
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aga gcc cga gcc aga gcc aga gga agg gcc cgc ggt cag gag aca gcg Arg Ala Arg Ala Arg Ala Arg Gly Arg Ala Arg Gly Gln Glu Thr Ala	5	10	15	20	25	223
cag ctg gtg ggc tcc act gcc agt cag caa cct ggt tat att cag cct Gln Leu Val Gly Ser Thr Ala Ser Gln Gln Pro Gly Tyr Ile Gln Pro	20	25	30	35	40	271
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Gln Arg gga aca gca gga gga aca gcc aag tca caa gga ctc cag ata Gln Arg Gly Thr Ala Gly Gly Thr Ala Lys Ser Gln Gly Leu Gln Ile	55	60	65	70	75	367
tct gct gga ttt cag gag tta tcc nta gca gag aga gga ggt cgt cgt Ser Ala Gly Phe Gln Glu Leu Ser Xaa Ala Glu Arg Gly Gly Arg Arg	70	75	80	85	90	415
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gtt aaa gaa tca aaa aca ggt tct tca gcc att ata gta agg tta agc Val Lys Glu Ser Lys Thr Gly Ser Ser Gly Ile Ile Val Arg Leu Ser	100	105	110	115	120	511
act aac cat ttc cgg ctg aca tcc cgt ccc cag tgg gcc tta tat cag Thr Asn His Phe Arg Leu Thr Ser Arg Pro Gln Trp Ala Leu Tyr Gln	120	125	130	135	140	559
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gct ctt ctt ttt caa cac gaa gat cta att gga aag tgt cat gct ttt Ala Leu Leu Phe Gln His Glu Asp Leu Ile Gly Lys Cys His Ala Phe	150	155	160	165	170	655
gat gga acg ata tta ttt tta cct aaa aga cta cag caa aag gga act Asp Gly Thr Ile Leu Phe Leu Pro Lys Arg Leu Gln Gln Lys Val Thr	165	170	175	180	185	703
gaa gtt ttt agt aag acc cgg aat gga gag gat gtg agg ata acg atc Glu Val Phe Ser Lys Thr Arg Asn Gly Glu Asp Val Arg Ile Thr Ile	180	185	190	195	200	751

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 Leu Gln Ile Ser Ala Gly Phe Gln Glu Leu Ser Xaa Ala Glu Arg Gly
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 His Ala Phe Asp Gly Thr Ile Leu Phe Leu Pro Lys Arg Leu Gln Gln
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 Ile Thr Ile Thr Leu Thr Asn Glu Leu Pro Pro Thr Ser Pro Thr Cys
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 Arg Arg Gly Pro Gly Gly Thr Leu Pro Gly Pro Ala Met Leu Ile Pro
 370 375 380
 Glu Leu Cys Tyr Leu Thr Gly Leu Thr Asp Lys Met Arg Asn Asp Phe
 385 390 395 400
 Asn Val Met Lys Asp Leu Ala Val His Thr Arg Leu Thr Pro Glu Gln
 405 410 415
 Arg Gln Arg Glu Val Gly Arg Leu Ile Asp Tyr Ile His Lys Asn Asp
 420 425 430
 Asn Val Gln Arg Glu Leu Arg Asp Trp Gly Leu Ser Phe Asp Ser Asn
 435 440 445
 Leu Leu Ser Phe Ser Gly Arg Ile Leu Gln Thr Glu Lys Ile His Gln
 450 455 460
 Gly Gly Lys Thr Phe Asp Tyr Asn Pro Gln Phe Ala Asp Trp Ser Lys
 465 470 475 480
 Glu Thr Arg Gly Ala Pro Leu Ile Ser Val Lys Pro Leu Asp Asn Trp
 485 490 495
 Leu Leu Ile Tyr Thr Arg Arg Asn Tyr Glu Ala Ala Asn Ser Leu Ile
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 Gln Asn Leu Phe Lys Val Thr Pro Ala Met Gly Met Gln Met Arg Lys
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Ala Ile Met Ile Glu Val Asp Asp Arg Thr Glu Ala Tyr Leu Arg Val
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Leu Gln Gln Lys Val Thr Ala Asp Thr Gln Ile Val Val Cys Leu Leu
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Ser Ser Asn Arg Lys Asp Lys Tyr Asp Ala Ile Lys Lys Tyr Leu Cys
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Thr Asp Cys Pro Thr Pro Ser Gln Cys Val Val Ala Arg Thr Leu Gly
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Lys Gln Gln Thr Val Met Ala Ile Ala Thr Lys Ile Ala Leu Gln Met
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Asn Cys Lys Met Gly Gly Glu Leu Trp Arg Val Asp Ile Pro Leu Lys
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Leu Val Met Ile Val Gly Ile Asp Cys Tyr His Asp Met Thr Ala Gly
625 630 635 640

Arg Arg Ser Ile Ala Gly Phe Val Ala Ser Ile Asn Glu Gly Met Thr
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Arg Trp Phe Ser Arg Cys Ile Phe Gln Asp Arg Gly Gln Glu Leu Val
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Asp Gly Leu Lys Val Cys Leu Gln Ala Ala Leu Arg Ala Trp Asn Ser
675 680 685

Cys Asn Glu Tyr Met Pro Ser Arg Ile Ile Val Tyr Arg Asp Gly Val
690 695 700

Gly Asp Gly Gln Leu Lys Thr Leu Val Asn Tyr Glu Val Pro Gln Phe
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Leu Asp Cys Leu Lys Ser Ile Gly Arg Gly Tyr Asn Pro Arg Xaa Thr
725 730 735

Val Ile Val Val Lys Lys Arg Val Asn Thr Arg Phe Phe Ala Gln Ser
740 745 750

Gly Gly Arg Leu Gln Asn Pro Leu Pro Gly Thr Val Ile Asp Val Glu
755 760 765

Val Thr Arg Pro Glu Trp Tyr Asp Phe Phe Ile Val Ser Gln Ala Val
770 775 780

Arg Ser Gly Ser Val Ser Pro Thr His Tyr Asn Val Ile Tyr Asp Asn
785 790 795 800

Ser Gly Leu Lys Pro Asp His Ile Gln Arg Leu Thr Tyr Lys Leu Cys
805 810 815

His Ile Tyr Tyr Asn Trp Pro Gly Val Ile Arg Val Pro Ala Pro Cys
820 825 830

Gln Tyr Ala His Lys Leu Ala Phe Leu Val Gly Gln Ser Ile His Arg
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Glu Pro Asn Leu Ser Leu Ser Asn Arg Leu Tyr Leu
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Oligonucleotide Primer

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